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Intrinsic Nature of e-Business Solutions for Humanitarian Relief**

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### **Abstract**

Commercial Fortune 500 companies come readily to mind in any discussion or categorization of global e-Businesses. However, organizations within the international humanitarian relief sector such as UNHCR, the UN's refugee agency, are consistently over-looked or underestimated as global 'e-Biz' players. This paper acts as a primer for the principles of e-Business for humanitarian relief by presenting deployment examples of traditional e-Business processes in non-traditional contexts; refugee and Internally Displaced Person (IDP) crises. Preliminary research indicates such illustrated indicative examples detailed in the Digital Aid Framework have potential for easy adoption and integration into future humanitarian (refugee & IDP) relief interventions.

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# Deploying the Digital Aid Framework: A Non-Traditionalist View of the Intrinsic Nature of e-Business Solutions for Humanitarian Relief

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## Abstract

*Commercial Fortune 500 companies come readily to mind in any discussion or categorization of global e-Businesses. However, organizations within the international humanitarian relief sector such as UNHCR, the UN's refugee agency, are consistently over-looked or underestimated as global 'e-Biz' players. This paper acts as a primer for the principles of e-Business for humanitarian relief by presenting deployment examples of traditional e-Business processes in non-traditional contexts; refugee and Internally Displaced Person (IDP) crises. Preliminary research indicates such illustrated indicative examples detailed in the Digital Aid Framework have potential for easy adoption and integration into future humanitarian (refugee & IDP) relief interventions.*

## 1. Introduction

International humanitarian relief organizations such as the United Nations High Commissioner for Refugees (UNHCR), Medecins Sans Frontieres (MSF) and CARE rarely come to mind when mention is made of traditional e-Businesses. Turban defines e-Business as not just the buying and selling of goods and services, but also servicing customers, collaborating with business partners, and conducting electronic transactions within an organization [6]. International humanitarian relief organizations incorporate elements of each e-Business process component described by Turban, yet these organizations are often overlooked or considered as a 'second thought' along side Amazon, Microsoft or other commercial businesses in any discussion of traditional e-Business. This should not be the case.

The processes of e-Business rather than the business itself should be the defining factor which constitutes a contemporary e-Business. Particularly, the dynamic environment in which humanitarian relief organizations operate, their requirements for

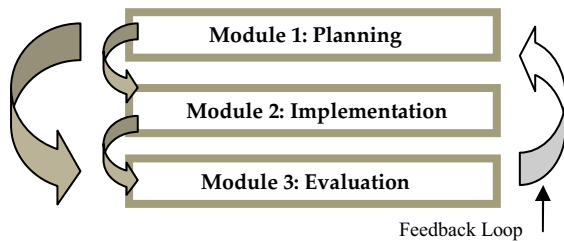
expediency in aid delivery, intricate international networks of logistics suppliers, technology collaborators and global financial supporter bases all intimate intricate e-Business structures. This paper highlights the intrinsic nature of humanitarian relief e-Business through discussion of the broader Digital Aid Framework.

In essence, the iterative, phased Digital Aid Framework [5] guides humanitarian relief organizations through technology-enabling relief modus operandi such as identification, processing and sustaining refugees and IDP in situ. The distinct lack of technology integration frameworks with similar characteristics is addressed by the Digital Aid Framework. Aid agencies will benefit from the proactive approach to IT&T adoption and integration offered by the framework rather than the reactive and ad hoc approach which currently exists.

A distinctive feature of the framework is the style of presentation used to illustrate deployment of the principles of e-Business for technology-enabling refugee and IDP relief. This is achieved through a combination of highlighted, illustrated indicative examples of a broad range of technologies deployed under different contexts. Some eight (8) examples are described in the framework. This short paper presents two (2), a Service Oriented Architecture (SOA) for e-learning through web-based training packages and a humanitarian-centric electronic payment system (EPS). A case-in-point diagram with descriptive narrative adds further cognitive reinforcement for understanding the framework.

## 2. Framework modules

The Digital Aid Framework consists of three modules; Planning, Implementation and Evaluation (as shown in Figure 1). Managing to tie the *concepts* of digital aid, and *elements* of e-Business to the *contexts* in which deployment may occur is integral to successful implementation of the framework.



**Figure 1. Digital aid framework modules**

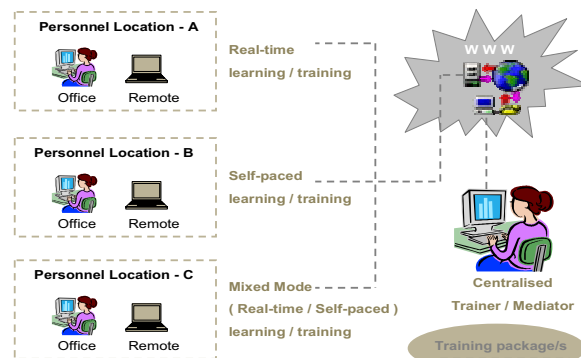
## 2.1. Planning module

The immediacy of disaster relief can often lead humanitarian relief organizations unwittingly to put pressure on themselves, pressure which leads to short-sighted and inappropriate work [3]. To overcome these negative outcomes, a planning module is introduced as the first strategic module of the Digital Aid Framework. Fulop & Linstead see the benefits of planning in a strategic manner as helping an organization to place its resources where they are likely to be of the most benefit [2]. Comprehensive planning enables relief organizations to respond with immediacy yet without the often resultant short-sighted and inappropriate work. Planning should be a long-term initiative, occurring on a continuous basis and concurrently to relief operations.

Activities and processes performed by personnel and organizations during this traditional planning phase *may* include: research, administration, partnership development (donors, technology partners, and other organizations), training and knowledge management. Each of these activities and processes are suitable as embedded principles of e-Business within a humanitarian context.

**2.1.1. Web-based training packages.** Web-based training packages as a component of a Service Oriented Architecture (SOA) offer many advantages to relief organizations and personnel engaged in training activities including: global e-distribution of training courses, the ability to conduct training at a time and place convenient to relief personnel, interactivity through online forms (quizzes) and different language versions of the same content specific training packages. A common traditional relief challenge faced by relief organizations is how to continually develop staff skills. Traditional training is invariably conducted in a classroom environment. In a relief context this is often impractical. Relief personnel cannot be removed from their workplace for any considerable length of

time. An indicative Digital Aid Framework solution which is far more flexible is web-based training packages. This format by its very nature transforms an organization through training and often necessitates collaboration with technology partners; a key aspect of Turban et al's definition of e-Business. Computer-based training (CBT) packages consisting of CD/DVD-Rom and printed material should also be a consideration for personnel stationed in remote locations where reliable access to the Internet cannot be guaranteed. Cautionary aspects of this proposed framework solution can be addressed by considering interoperability issues (platform independence) and the development and evaluation of any training packages in a consultative process between organization, trainer and learner.



**Figure 2. Web-based training packages**

Figure 2 illustrates three modes of training: real-time, self-paced and mixed mode. All three should be supervised by a skilled trainer or mediator. The most flexible delivery is provided using self-paced. In non-critical, on-going refugee and IDP relief interventions this mode is beneficial for maintaining skill levels of field personnel unable to participate in traditional classroom-based instruction. Personnel complete training in a 'piecemeal' fashion as time and the criticality of relief activity permit. This aspect of the IT&T solution addresses the principle of providing priority assistance to relief recipients over the adoption and integration of the technology application. Web-based training in the field should always be performed as a secondary consideration to the provision of care.

## 2.2. Implementation module

The implementation module of the Digital Aid Framework contains many of the mechanical aspects of delivering refugee relief. These aspects range from the

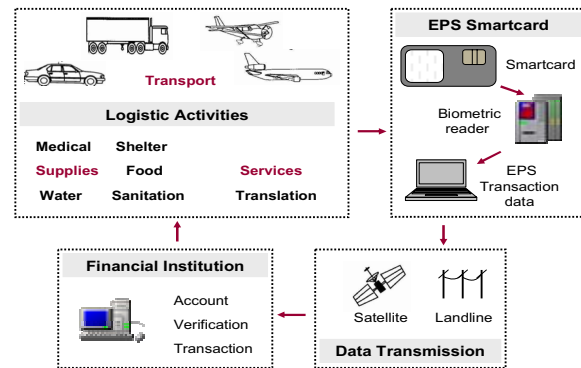
co-ordination of relief personnel, identification and processing of refugees and IDP, sustaining the care of these vulnerable people in situ (camps and safe-havens), repatriation and under certain circumstances gathering war crime evidence. This module of the framework contains highlighted IT&T e-Business integration application examples for activities and processes carried out during each of the four relief cycle stages; 1- Response and Mobilization, 2- Consolidation in situ care, 3- Identification, processing and repatriation, and conditional 4- War crime evidence gathering and prosecution.

**2.2.1. Relief cycle stage 1.** The first stage of a refugee/ IDP relief cycle is that of response and mobilization. Traditional activities and processes which *may* occur as part of this stage *could* include: co-ordinating personnel and partners, initializing logistics plans, gaining governmental or regulatory clearances (including legal mandates), and reconnaissance of conditions in-country. The highlighted example for this stage, described fully in the framework, involves the use of automated email and SMS alerts for information dissemination. This method also illustrates the advantage of developing the framework as Internet-centric. This feature facilitates e-Business activities carried out in day-to-day operations.

**2.2.2. Relief cycle stage 2.** The second stage of a refugee/ IDP relief cycle is that of consolidation and in situ care. Traditional relief activities and processes which *may* occur as part of this stage *could* include: maintaining supply chains, incorporating electronic payment systems (EPS) into logistics and determining distribution routes as changing circumstances dictate.

In situations where banditry is rife, evidenced in Somalia, Rwanda, Afghanistan and Sudan, the process of using monetary currency as the method for logistics related payments increases the vulnerability of relief workers and suppliers to attack. Transferring the mode of payment from cash to electronic transactions offers the possibility of reducing security vulnerability 'on the ground'. EPS are a viable way of transforming the traditional method of logistics related payments. Lawrence et al describe an EPS as a process whereby value (usually money) is exchanged for goods, services or information [4]. By incorporating biometric authentication into a humanitarian-centric EPS, greater security can be integrated into each transaction. By enabling a smartcard with biometric authentication, the monetary value of the card on any black-market to bandits is lessened.

The EPS highlighted in this paper should be viewed within the context of transactions performed remote from the relief intervention; such as the main logistics staging point or port. This context is favored as the lack of EPS infrastructure in a primary relief camp would be unsuitable and indigenous partner personnel such as contracted translators and drivers would expect payment in 'hard' currency.



**Figure 3. A humanitarian-centric EPS**

Figure 3 illustrates a humanitarian-centric EPS. The activation of the account for each smartcard is controlled through a biometric process which is incorporated onto the card and verified by a card reader. Transactions may be completed on a single or batch basis by transferring transaction data to a relevant partner financial institution using an appropriate and available transmission media. Payment from the relief organization account is transferred to the account of the logistics partner. The complete transaction can be audited at a later date by both sides involved in the transaction process.

**2.2.3. Relief cycle stages 3 and 4.** The third stage of a refugee/ IDP relief cycle is that of identification, processing and repatriation. Traditional relief activities and processes which *may* occur as part of this stage *could* include: identifying refugees, issuing identity and travel documents, determining (identifying, sourcing and mapping) safe-havens, and facilitating family reunification. The highlighted e-Business deployment example fully described in the framework is for multi-modal biometric identification of repatriating refugees and IDP.

The final stage of a refugee/ IDP relief cycle is that of war crime evidence gathering and prosecution. This stage is a conditional stage dependent upon the type of relief intervention being performed; similar to Rwanda or Kosovo where aspects of ethnic cleansing are

involved. Activities and processes which *may* occur as part of this stage *could* include: interviewing refugees, documenting geo-spatial data of war graves and collating ante or post-mortem data. IT&T applications and technologies integrated in these activities and processes *could* include mobile devices, digital video, Geographical Information Systems (GIS) and Global Positioning Systems (GPS), knowledge management (KM) and database management systems (DBMS).

The highlighted example for this stage, described fully in the framework, involves multimedia databases for documenting war crimes against refugees and IDP. This example follows and extends the War Crimes Documentation Database (WCDD) established as part of the Illinois Institute of Technology's InterProfessional (IPRO) Program [1].

### 2.3. Evaluation module

The final module of the Digital Aid Framework is that of evaluation. This module considers how aspects of previous modules have been performed and is intended to be performed post crisis, as a reflective process. Activities and processes *could* include: review panels, personnel evaluations or procedure manual updates. Applications and technologies utilized *could* include: video-conferencing, interviews, online forms, surveys, questionnaires, email, chat and group message boards. The highlighted e-Business deployment example for this stage, described fully in the framework, involves an evaluative/ reflective online forum for all personnel of a relief organization post crisis.

### 3. Conclusion

This paper has served two functions; to describe the intrinsic nature of e-Business for humanitarian relief and identify for the international humanitarian relief community illustrated indicative deployment examples of traditional e-Business practices and processes within a non-traditional context. The cognitive benefits of the

Digital Aid Framework's indicative approach, along with its conceptual nature and Internet-centric design assist relief organizations to move toward a 'state of readiness' for future relief interventions.

The ways in which technology impacts upon humanitarian relief organizations will continue to evolve as new and emerging systems such Artificial Intelligence (AI) and Decision Support Systems (DSS) transform the activities and processes of relief interventions. The Digital Aid Framework challenges the mindset of humanitarian relief organizations and provides an opportunity to embed these emerging technologies for improved response to, and support of future relief interventions, and as such is a timely addition to the scant body of technology-enabled humanitarian relief literature which presently exists.

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